

Clouds over Soot Evaporation: Errors in Modeling Laser-Induced Incandescence of Soot

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Abstract

The ambiguity and incorrect treatment of the evaporation term among some LII models in the literature are discussed. This study does not suggest that the correct formulation presented for the evaporation model is adequate, or that it reflects the soot evaporation process under intense evaporation. The emphasis is that the current evaporation model must be used correctly in the evaluation of the LII model against experimental data. Numerical results are presented to demonstrate the significance of the molecular weight associated with the heat of evaporation and the thermal velocity of carbon vapor on the results obtained with the evaporation model. Other errors frequently repeated in the literature are also identified.

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